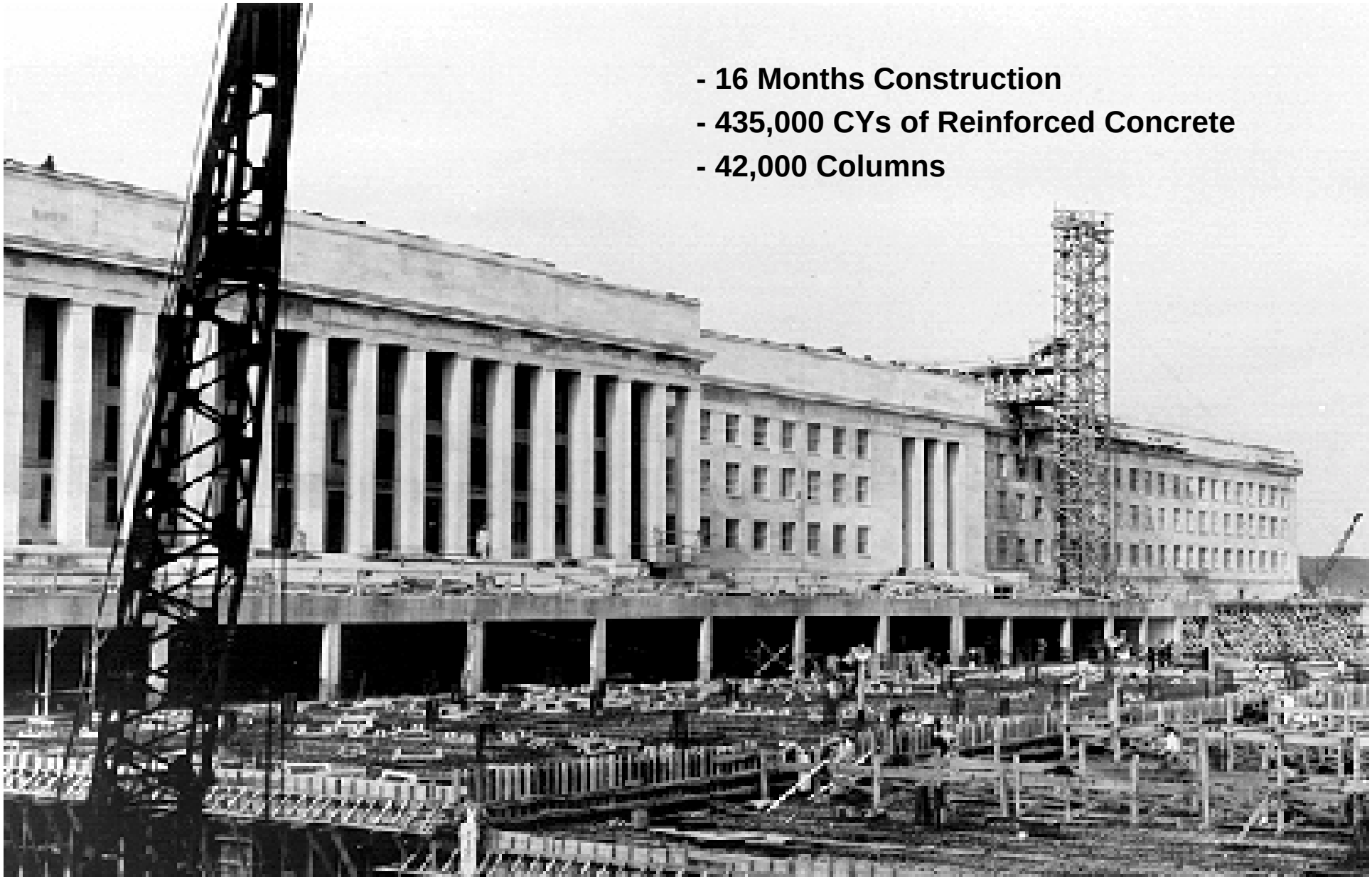
3rd Pentagon Accessibility Forum

August 9, 2001

The Pentagon: Original Construction

- Construction begins 1941
- Built on swampland
- Site of old Hoover airport
- Low residential area: “Hell’s Bottom”

The Pentagon: Original Construction



- 16 Months Construction
- 435,000 CYs of Reinforced Concrete
- 42,000 Columns

Pentagon early years: “Open Bay” office environment:

Lack of robust electrical, cooling, communication systems

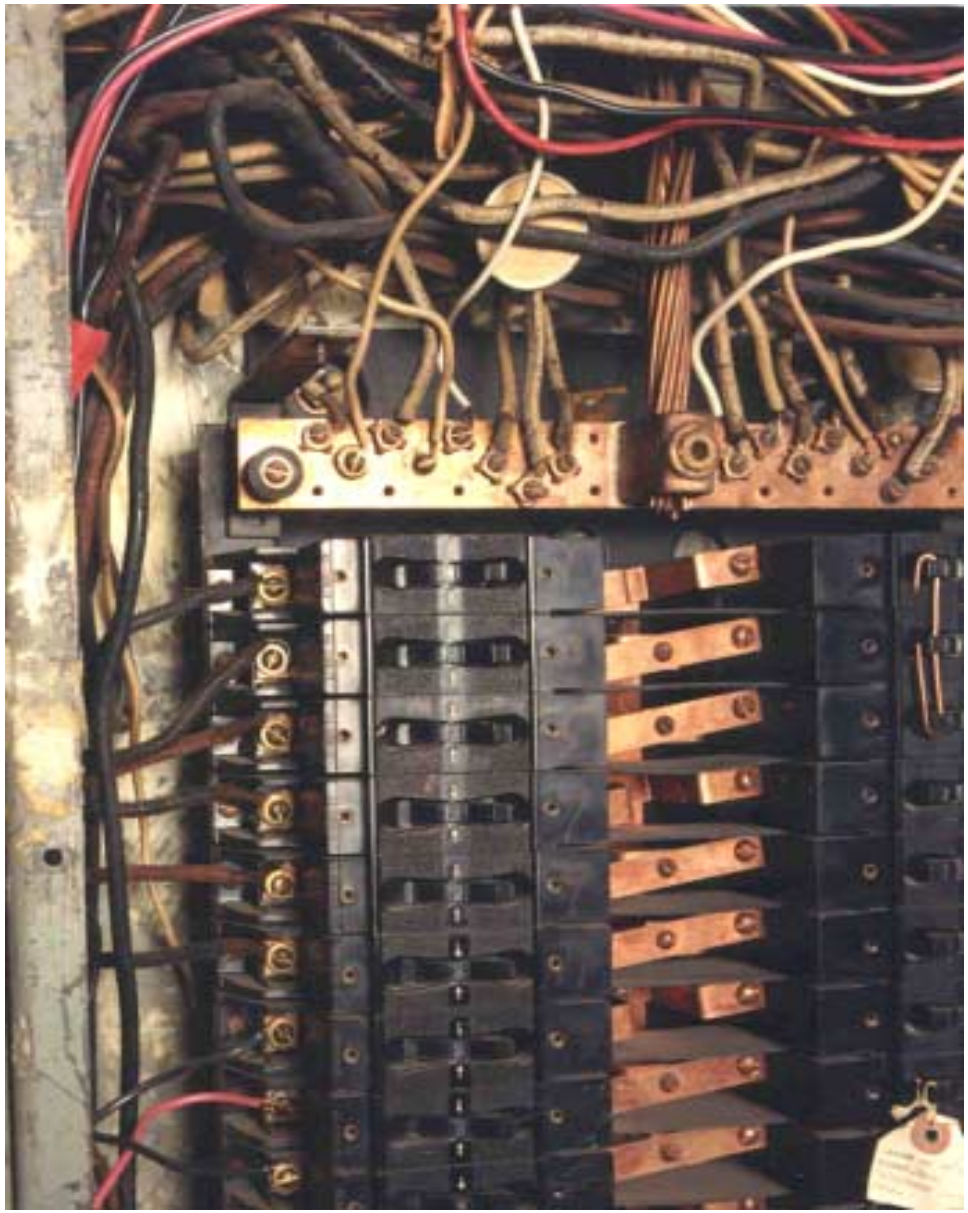
THE PROBLEM:

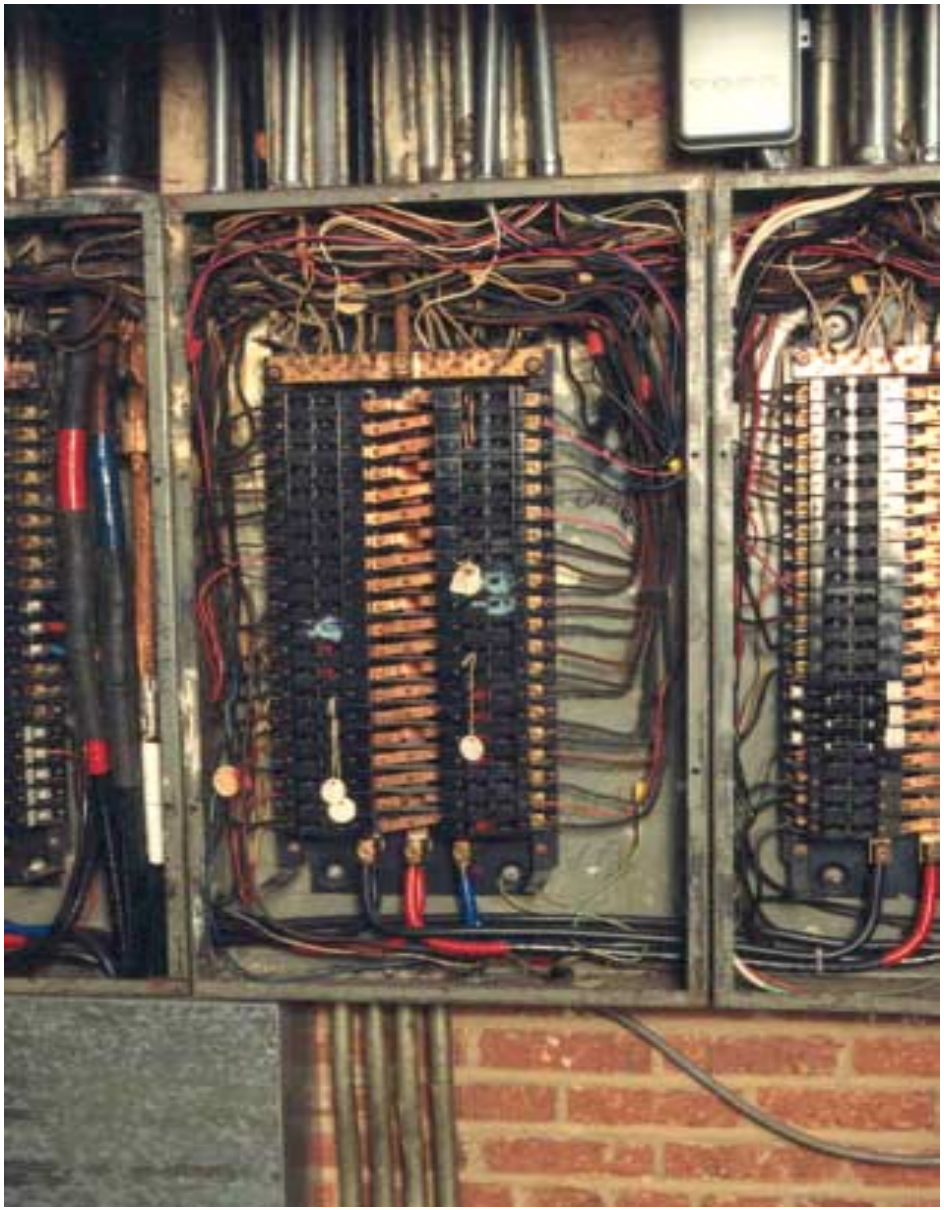
The Pentagon Has Never Undergone a Major Renovation

Antiquated Building Systems: plumbing, utility lines

Ventilation

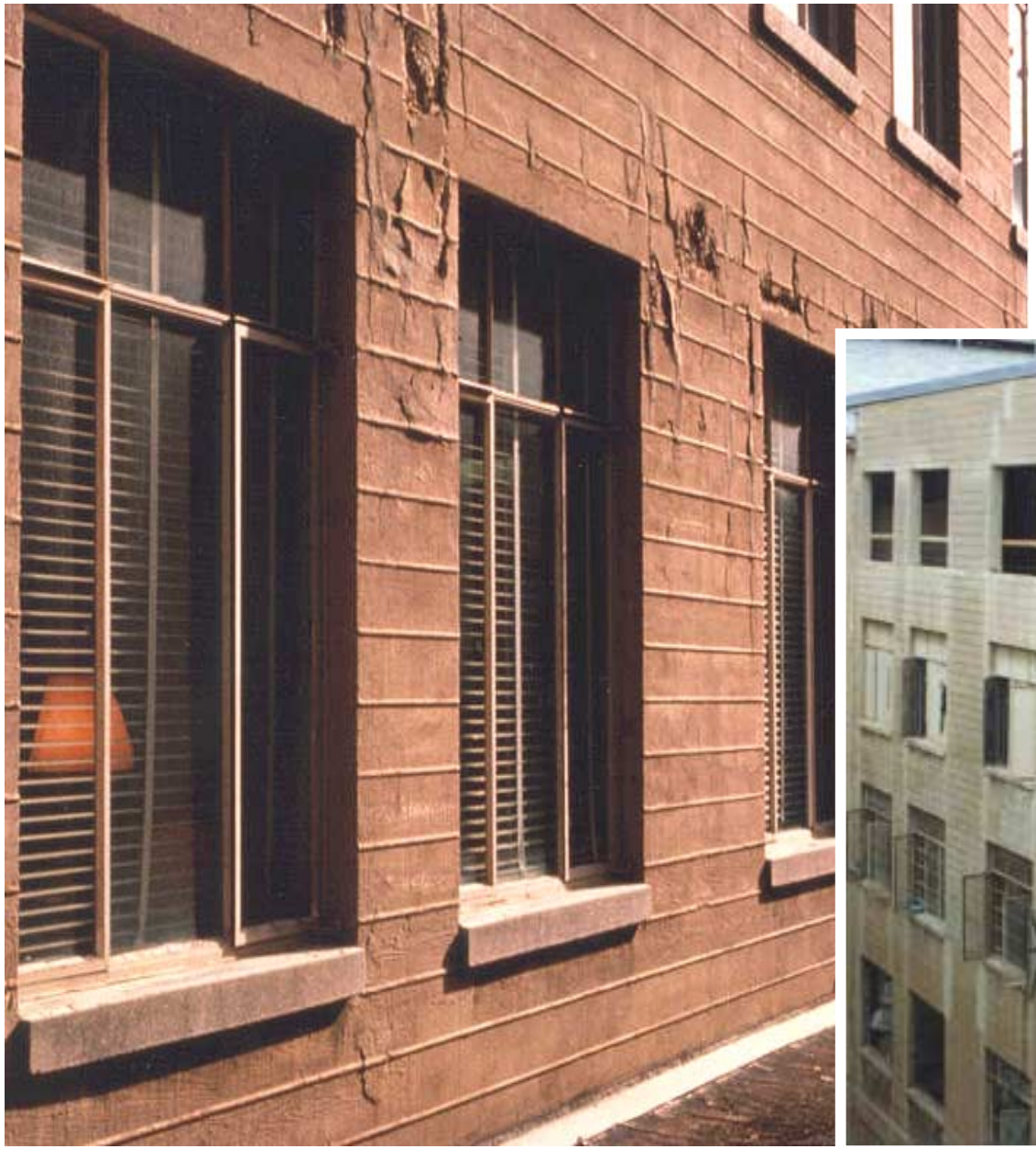
Building Code Violations:
Electrical, Fire, Life Safety, ADA and others





Hazardous Materials: Asbestos, Lead Paint, Mercury, PCBs

Poor Energy Efficiency

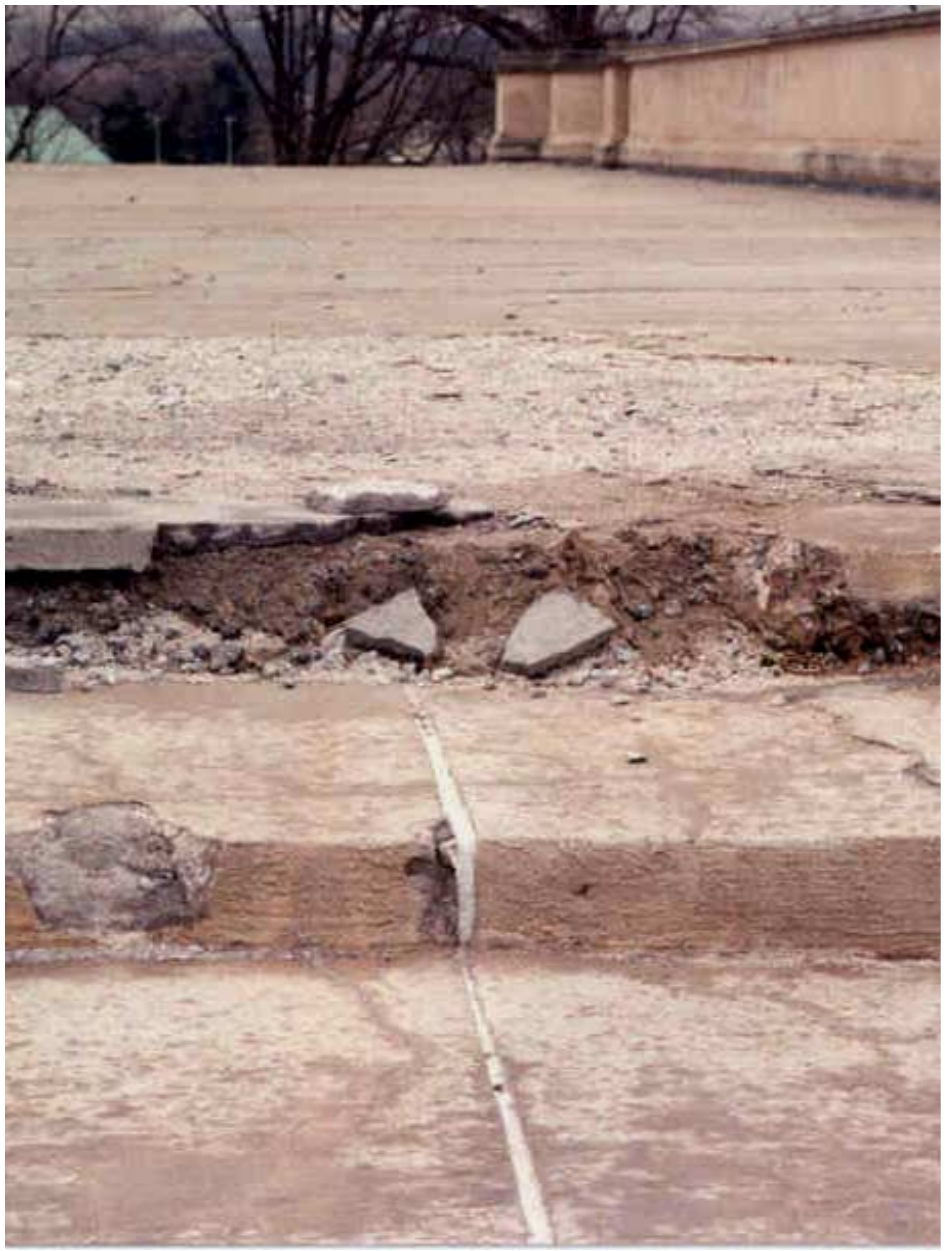


7,748 antiquated windows

30% energy loss

Antiquated Telecommunications System:
New systems on top of old, minimal documentation

Deteriorating Exteriors



Poor Working Conditions:

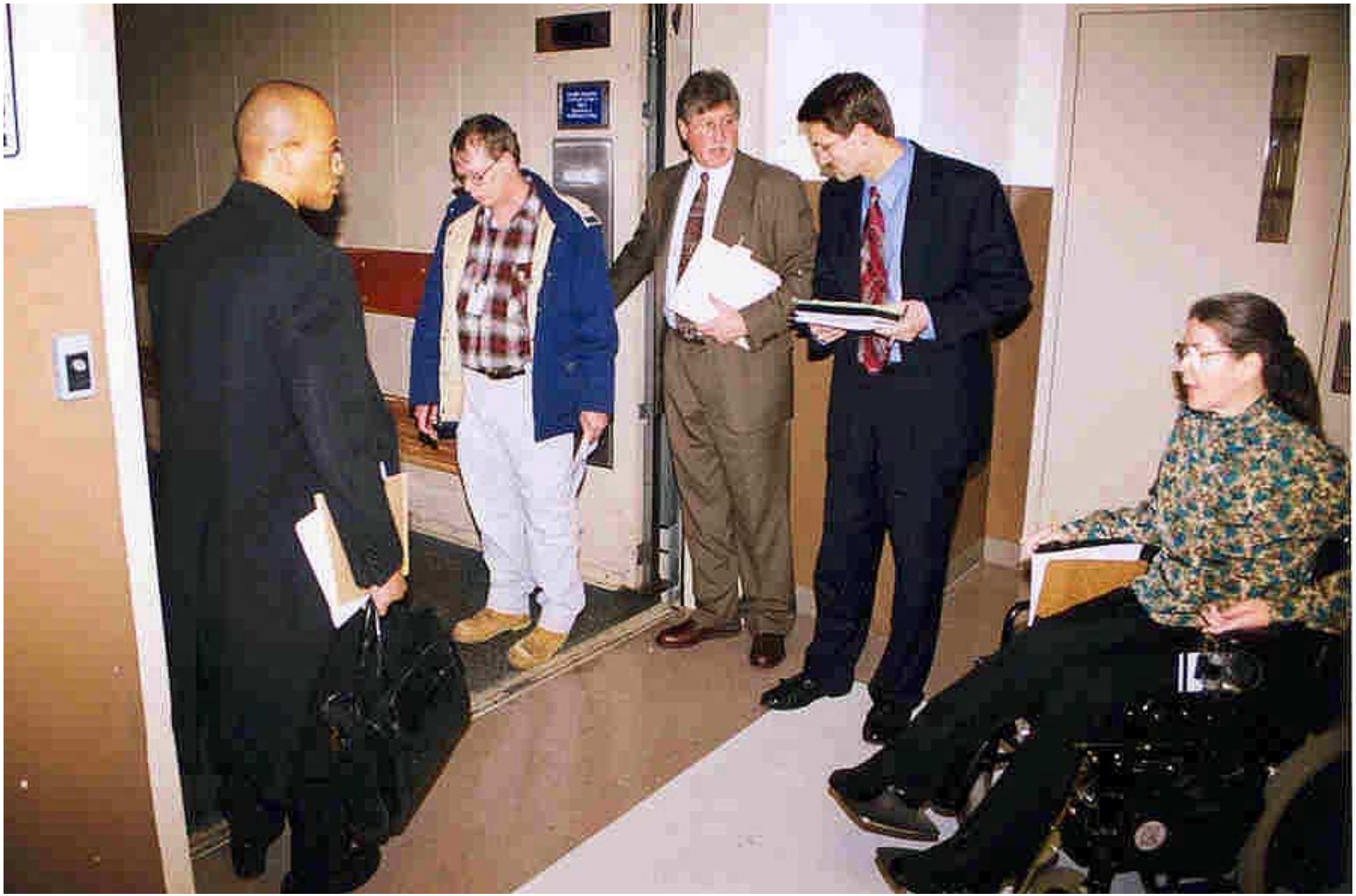
- Inefficient work space
- Minimal flexibility
- Outdated, mismatched furniture
- Unsafe

- Dark, dank corridors
- Poor air flow
- Shifting floor slab

Poorly Designed, Overcrowded Operations Centers

Obstacles for Persons with Disabilities

Existing, antiquated freight elevators - numerous injuries



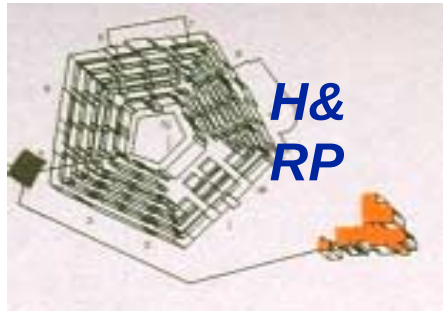
Ramps not compliant with the ADA

THE SOLUTION:

A COMPLETE RENOVATION
"Ceiling to Slab"

- ***Replace all building systems***
- ***Improve physical, IT security***
- ***Remove all hazardous materials***
- ***Improve energy efficiency***
- ***Comply with modern building codes***
- ***Improve vertical mobility, comply with ADA***
- ***Improve pedestrian and vehicular traffic flow***
- ***Preserve/restore historical features***
- ***Build to last the next 50 years***

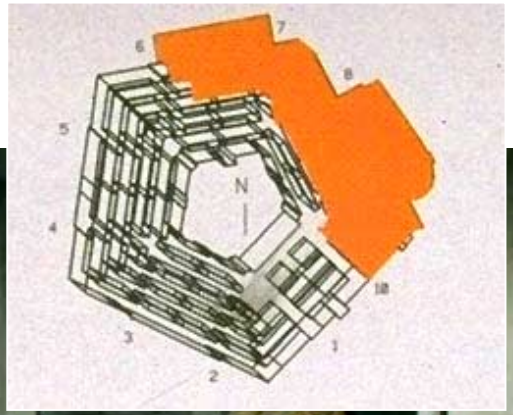
New Heating & Refrigeration Plant



- 30 % more efficient
- New utilities distribution tunnel

Basement/Mezzanine Renovation

2



THE CHALLENGE:

KEEP THE PENTAGON OPERATIONAL DURING RENOVATION

- ***Coordinate activities with all stakeholders***
- ***Relocate 25,000 people during course of renovation***
- ***Maintain accessibility for persons with disabilities***
- ***Work around 20,000 people***
- ***Keep building systems operating***
- ***Minimize disruption***
- ***Maintain security***

The Renovation Process: Swing Space

The Renovation Process: Swing Space

- *45 floors renovated*
- *Nearly 1,000,000 square feet*
- *5,500 tenants relocated*

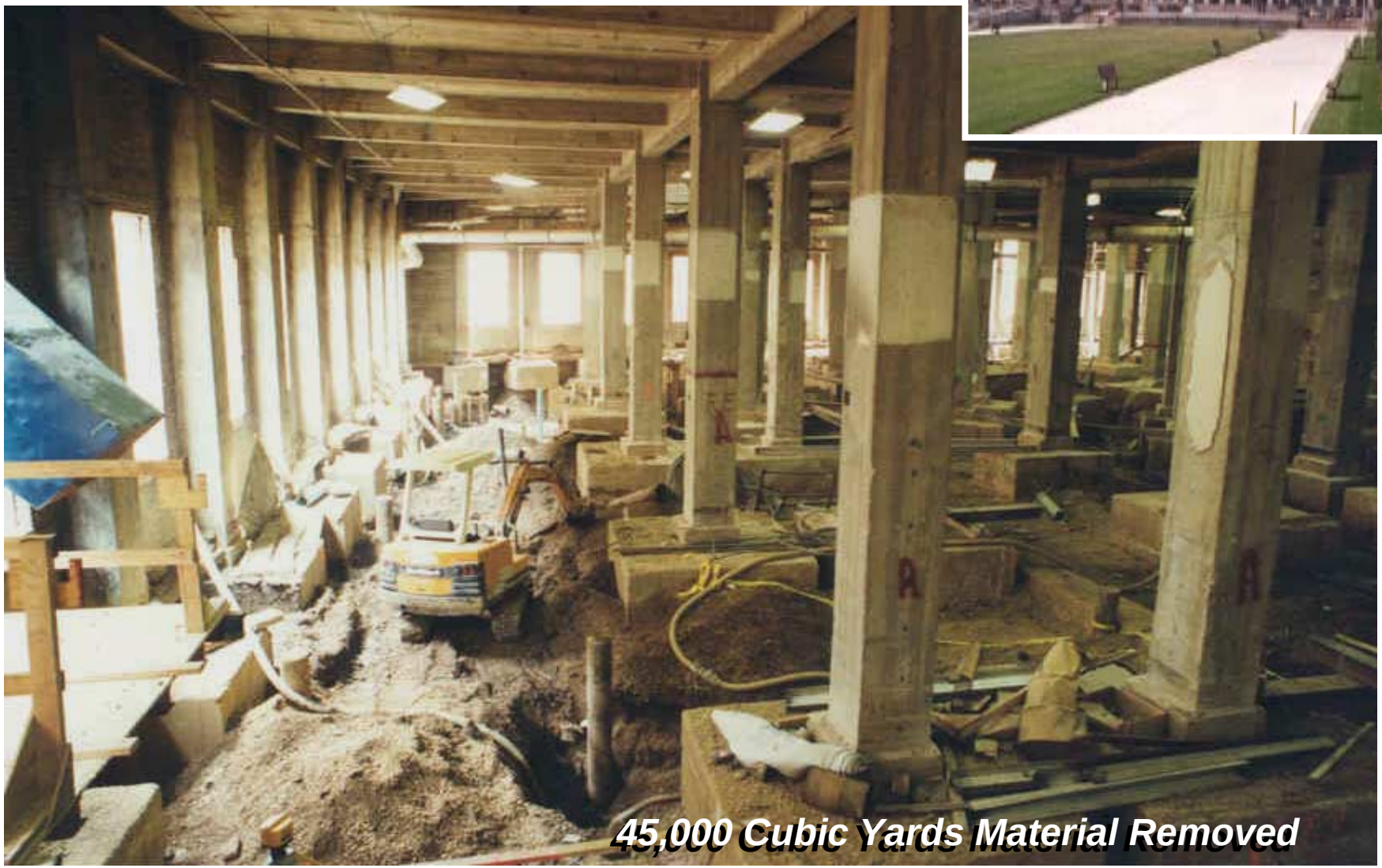
- *Modern office environment*
- *Secure telecommunications*
- *Requirements duplicated*

The Renovation Process: Swing Space Move-In

Renovation Begins in the Pentagon's Basement

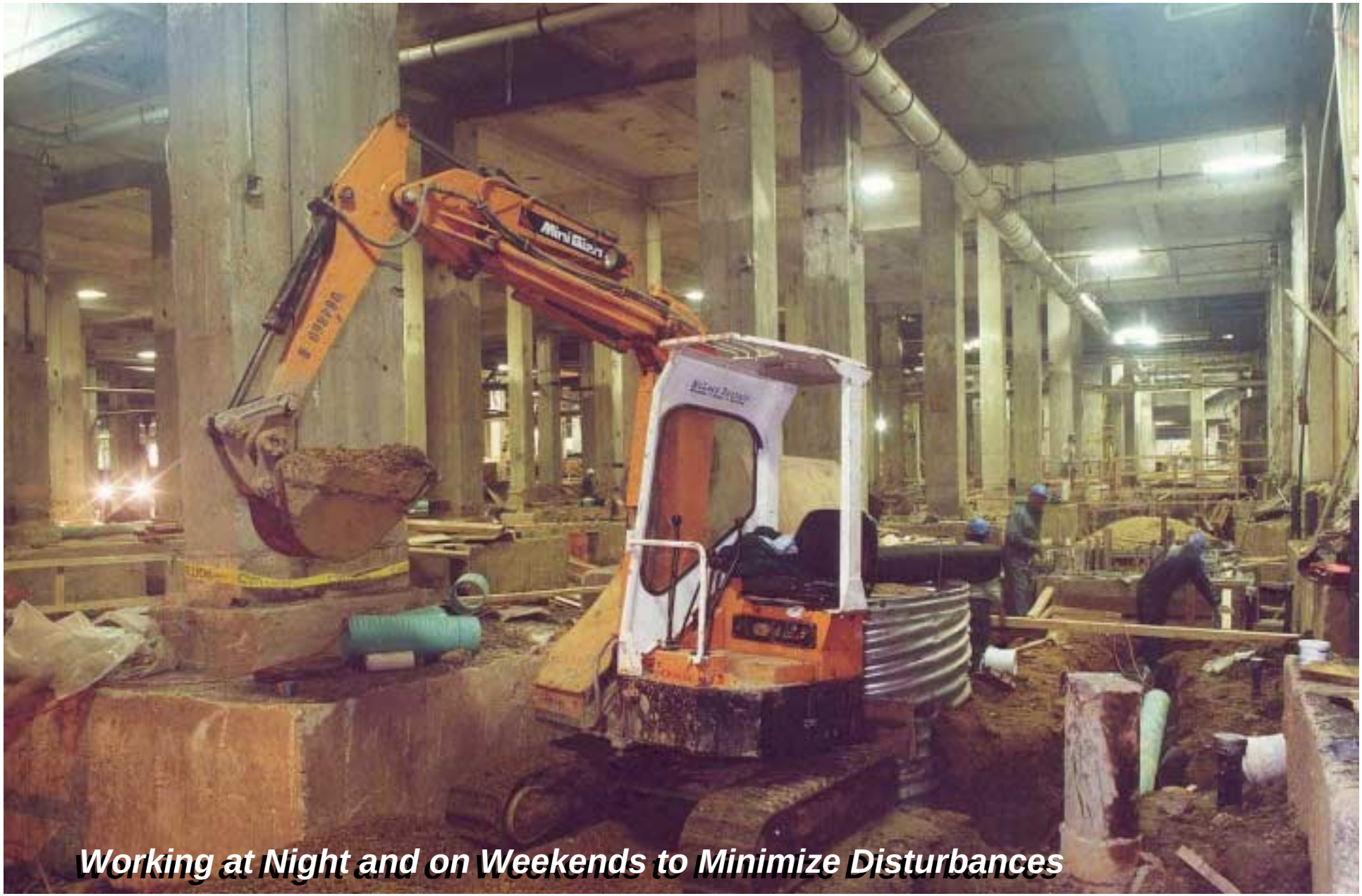
The Pentagon Basement

Below River Terrace and
Office of the Secretary of Defense



45,000 Cubic Yards Material Removed

The Pentagon Basement



Working at Night and on Weekends to Minimize Disturbances

The Pentagon Basement: A New Slab

The Renovated Pentagon: The Mezzanine - A New Level

The Renovated Pentagon:
Modern Conference Rooms and Work Space

The Renovated Pentagon: Modern Technical Facilities

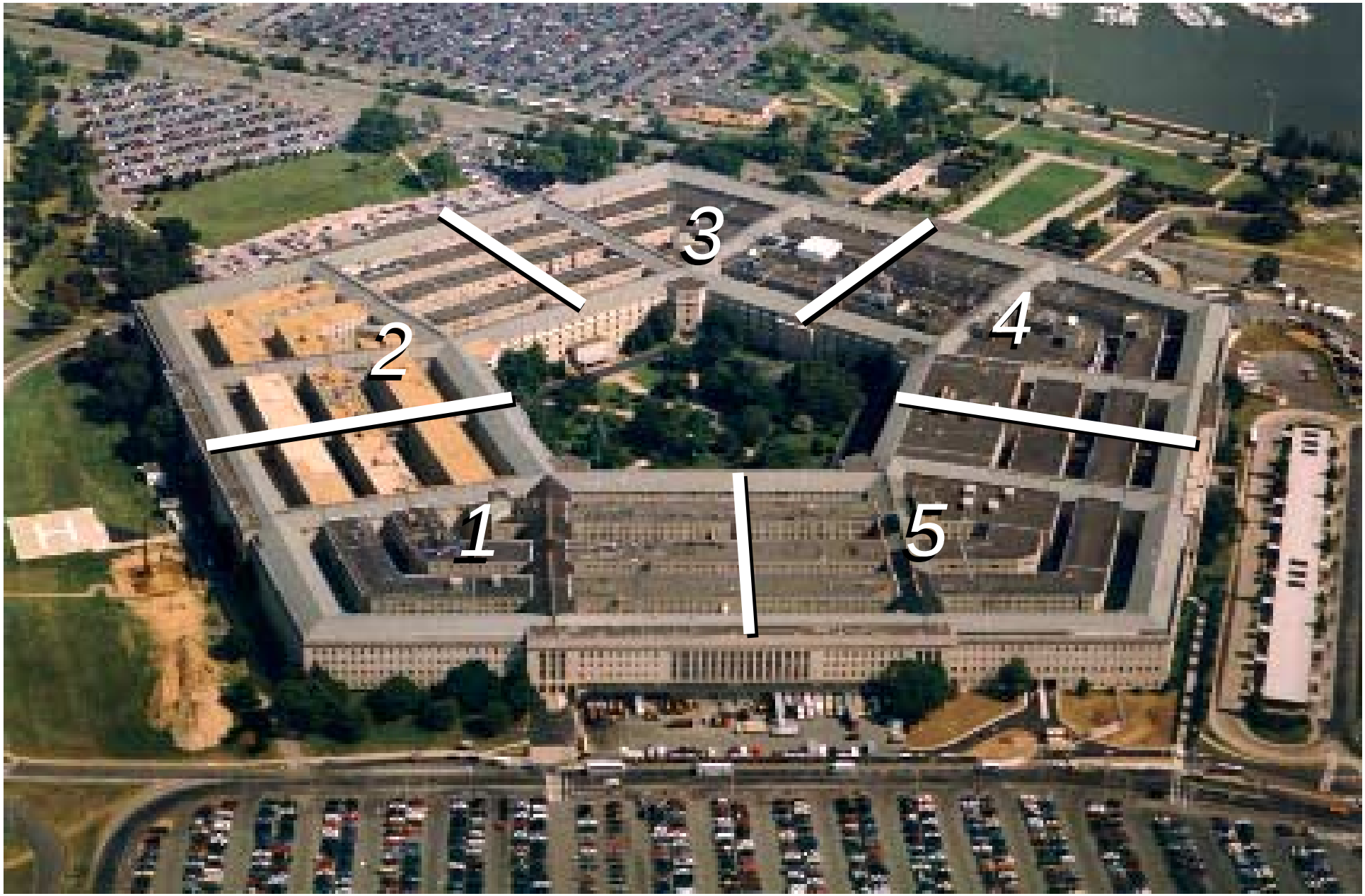
The Renovated Pentagon: Modern Communications Facilities

Basement corridors: brighter and energy efficient

OLD

NEW

Renovation Sequence: Wedges 1-5



Wedge 1

- *5,000 personnel relocated*
- *1,000,000 sq. feet*
- *1,500 windows replaced*
  (382 historic, blast-resistant)
- *83 million lbs. debris*
- *2,000 tons asbestos*

Wedge 1: “Down to the bare bones”

Wedge 1: Improvements to building systems

Modern building systems

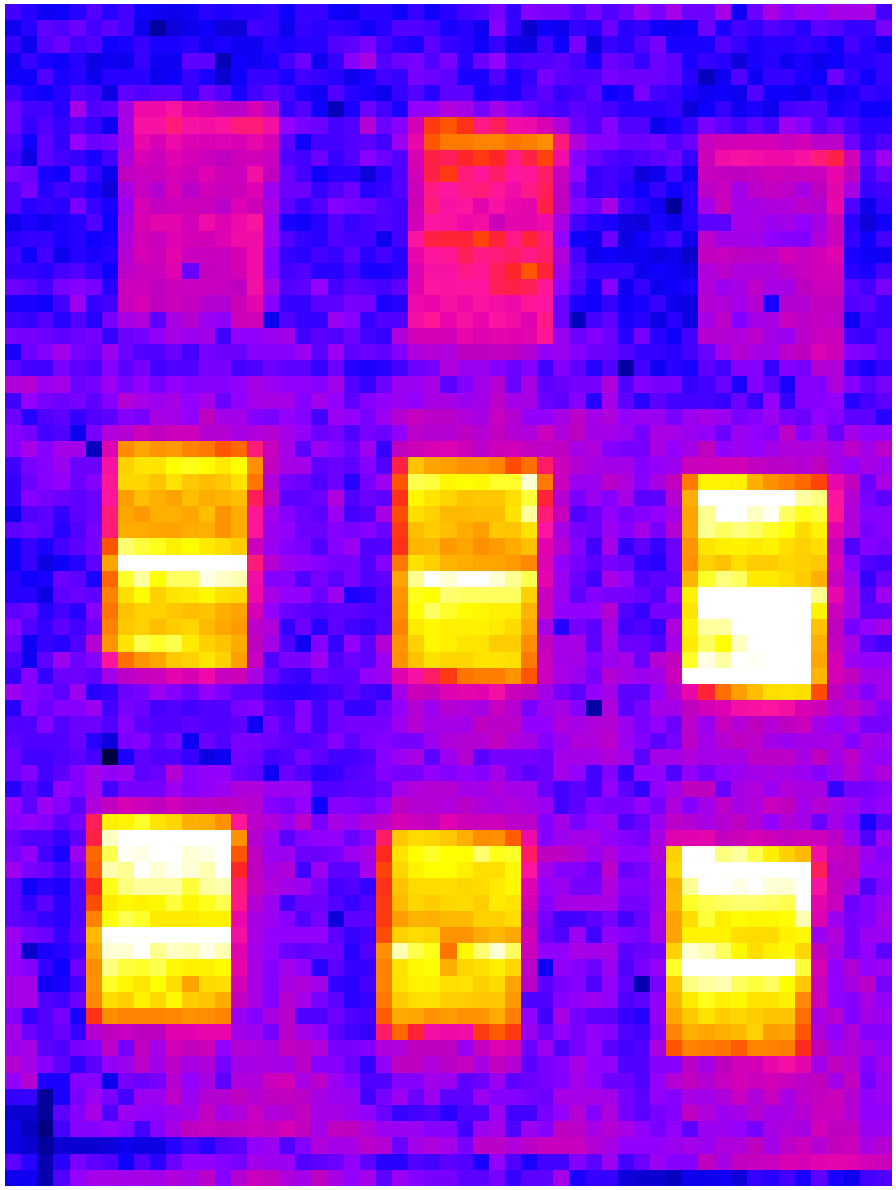
Increased reliability, redundancy and security

Improved air flow

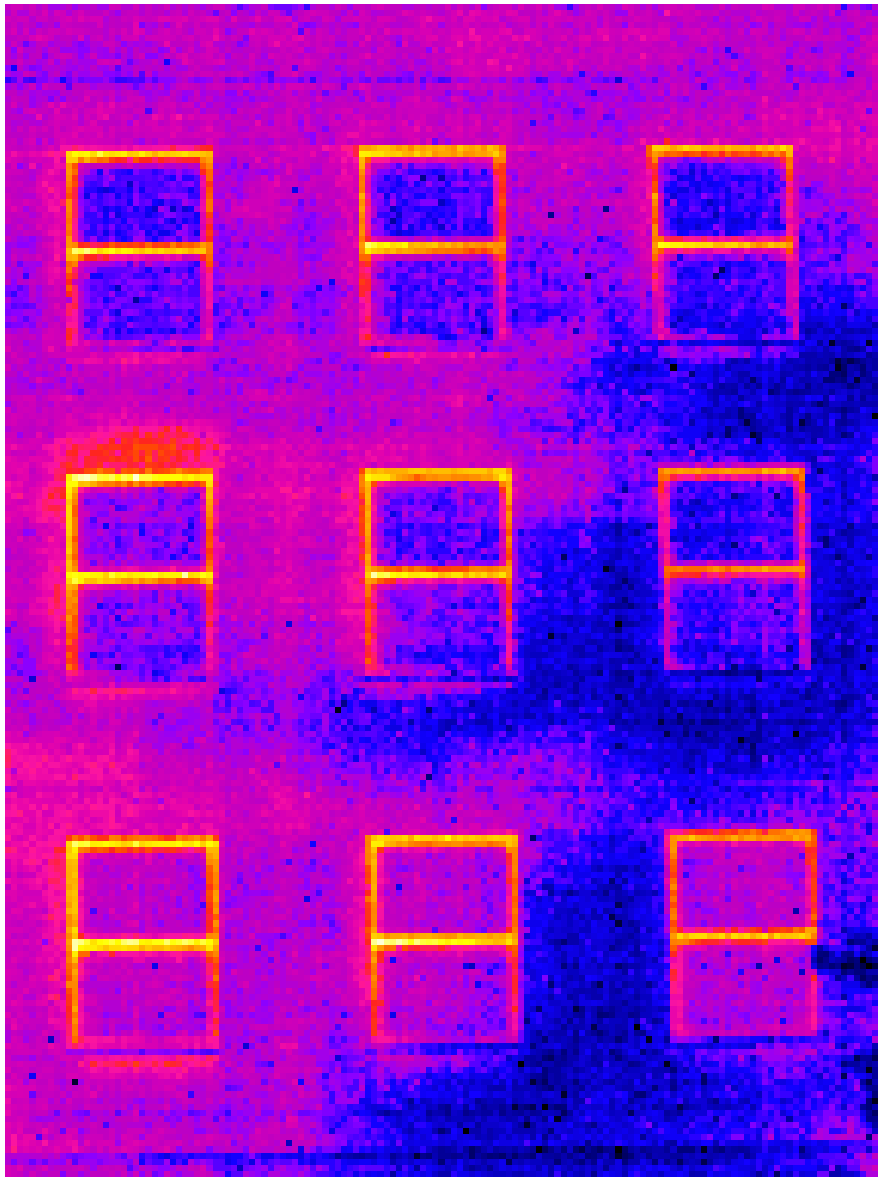
Wedge 1: Improvements to physical security

Wedge 1: Tighter thermal envelope, new windows, insulation, ductwork

Wedge 1: Improvements to Energy Efficiency



OLD WINDOWS



NEW WINDOWS

Wedge 1: Return to open bay environment

Wedge 1: Safe, modern, flexible office environment

Wedge 1: Open bay improves air flow, accessibility

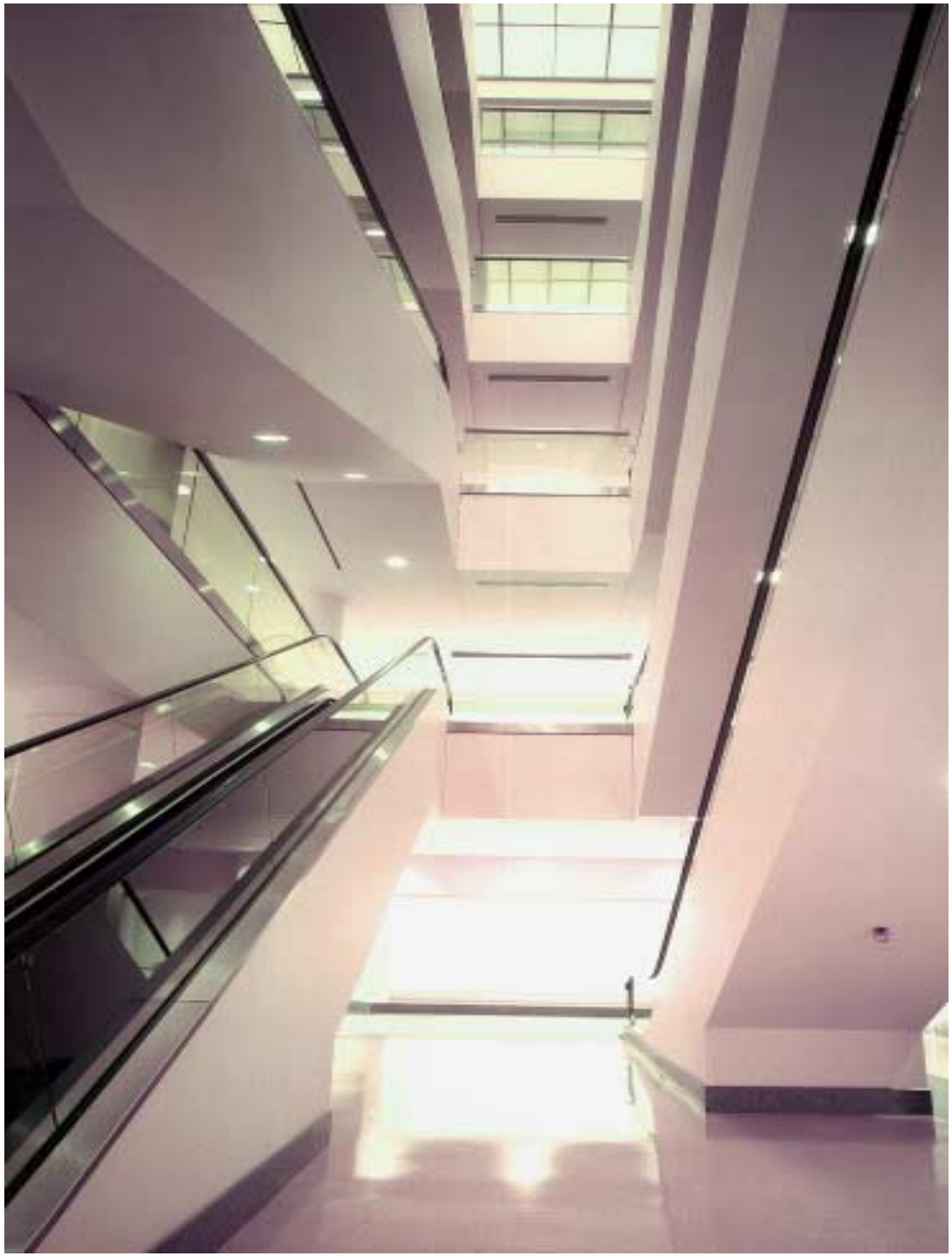
Wedge 1: Open bay permits natural light throughout space

Wedge 1

- Modern corridors and interior spaces
- Energy efficient

Wedge 1

- Improvements to vertical mobility: new escalators, 8 new passenger elevators



Wedge 1: Ready for Move-In

- Modern systems furniture
- Increased flexibility
- Improved air flow and lighting

Wedge 1: Sensor-activated restroom fixtures

Wedge 1: State-of-the-art mechanical, electrical, communications systems; increased reliability, security

Wedge 1: New Building Operations Command Center

Wedge 1 Grand Opening - March 2001

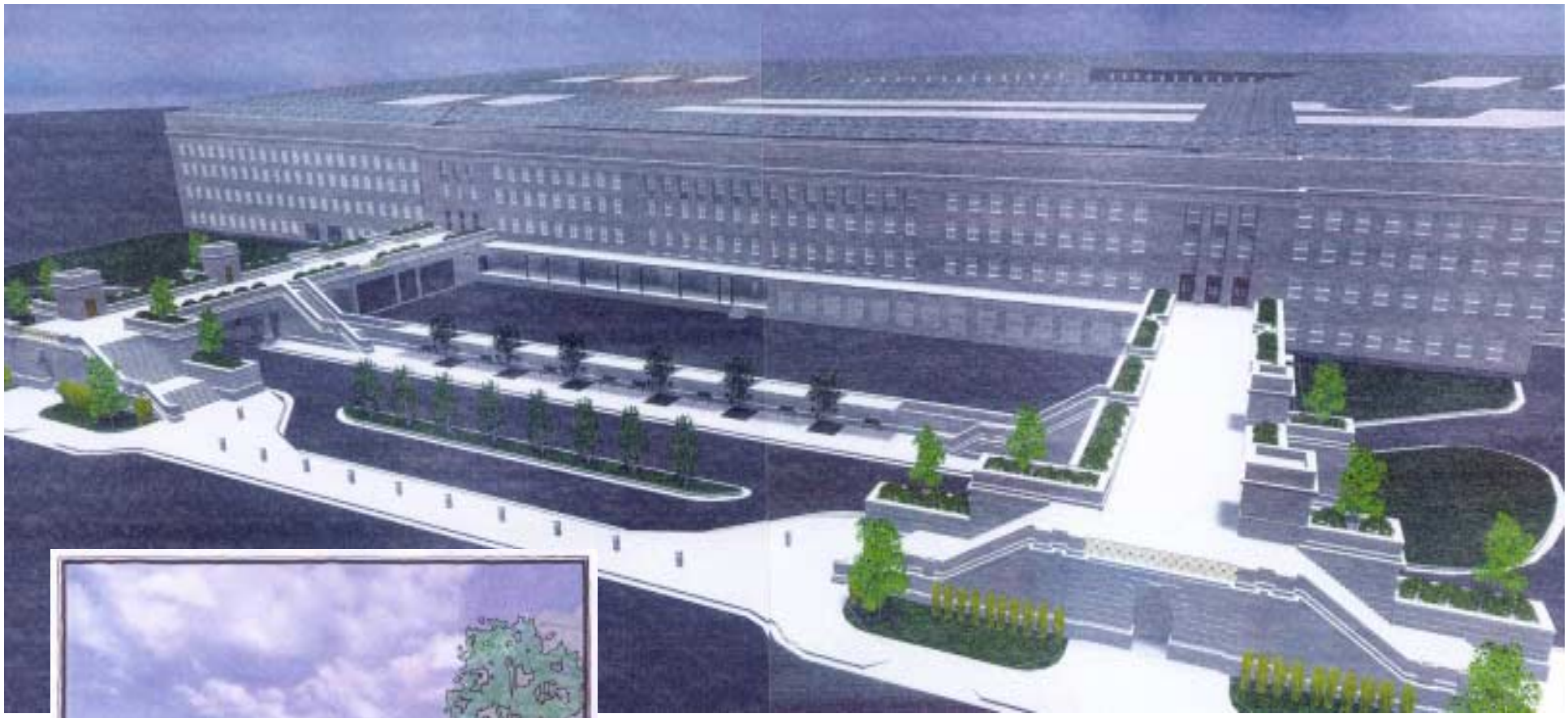
- 1,500 personnel moved in since Feb 01
- 4,500 by October 2001

PenRen HELP desk provides on-the-spot assistance

South Terrace Bridge Project

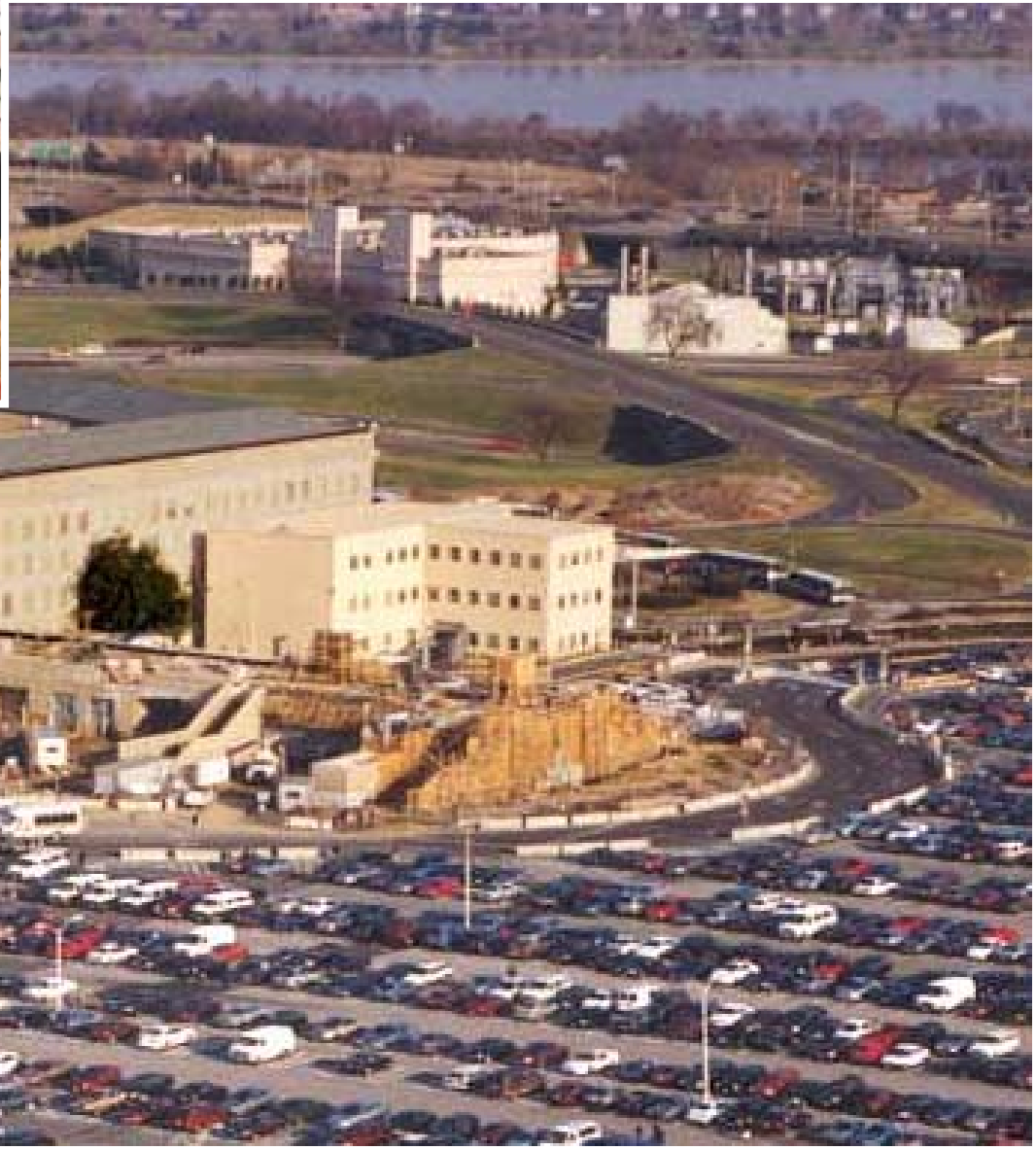
- 3,000 vehicles
- 7,000 - 10,000 pedestrians
- Police officers needed to regulate traffic flow
- Traffic jams during rush hour

South Terrace Bridge Project Design Approved - 1997



Access to Pentagon over Rotary Road, new bus shelters

South Terrace Bridge Project - Construction begins Fall 1997



South Terrace Bridges - July 2001

South Terrace Bridges

- Safe access without pedestrian/vehicle conflicts
- Two elevators on each bridge for redundant accessibility

South Terrace Bridges

- New bus shelters
- New kiss-and-drop lane

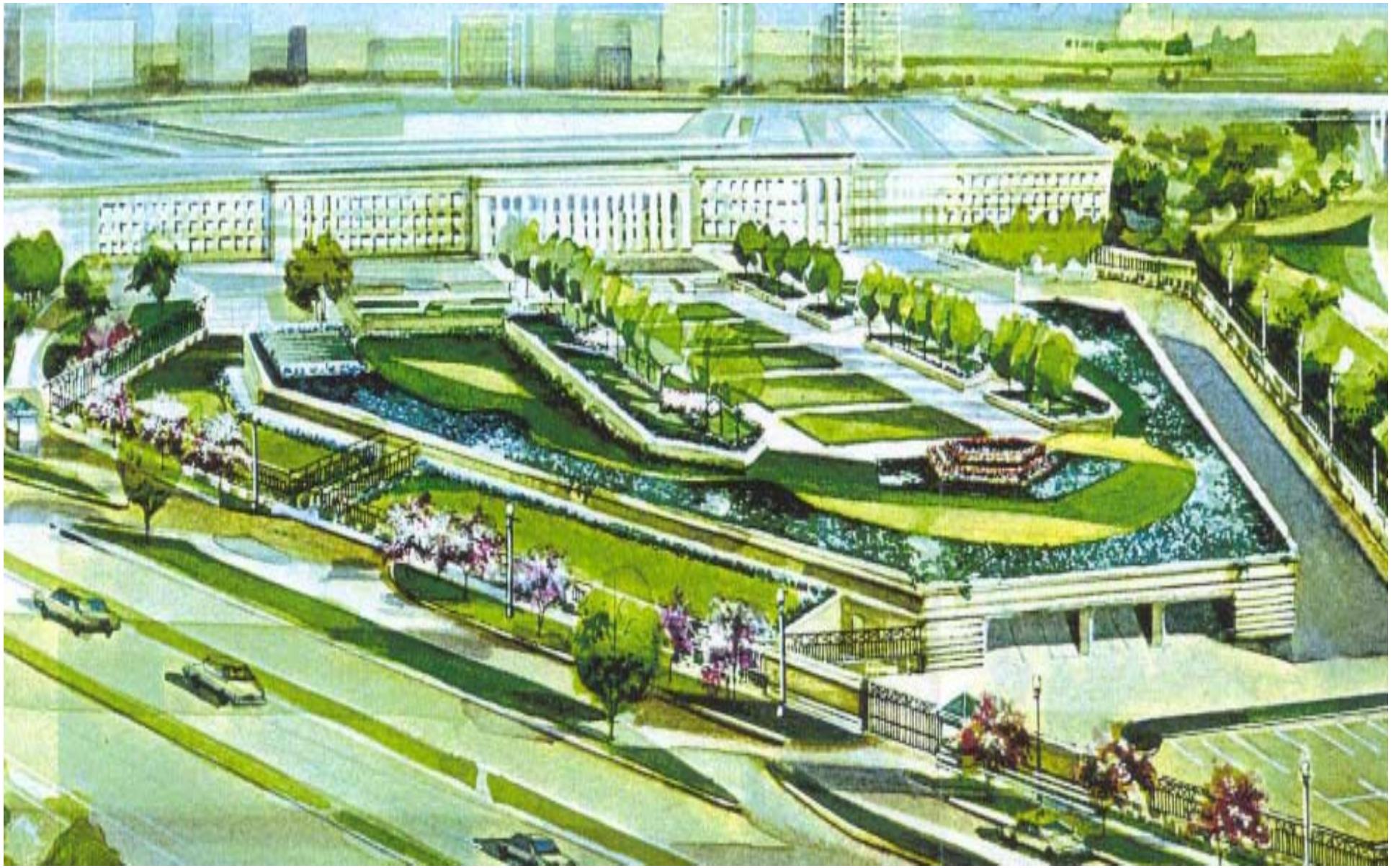
New Projects to Improve Physical Security

Remote Delivery Facility

Pentagon Metro Entrance Facility

The Problem: Vehicular traffic adjacent to occupied areas

The Solution: A Remote Delivery Facility



The Remote Delivery Facility

- First design-build contract
- Groundbreaking began May 1999

The Remote Delivery Facility

- Secure, consolidated screening facility
- 250 vehicles daily
- 250,000 square feet

The Remote Delivery Facility - July 2001

The Remote Delivery Facility

- Loading docks open Aug 00 precisely on schedule, under budget

The Remote Delivery Facility

- Improved screening procedures

The Pentagon Metro Station - March 2001

The Problem: Close proximity of vehicles to the Pentagon

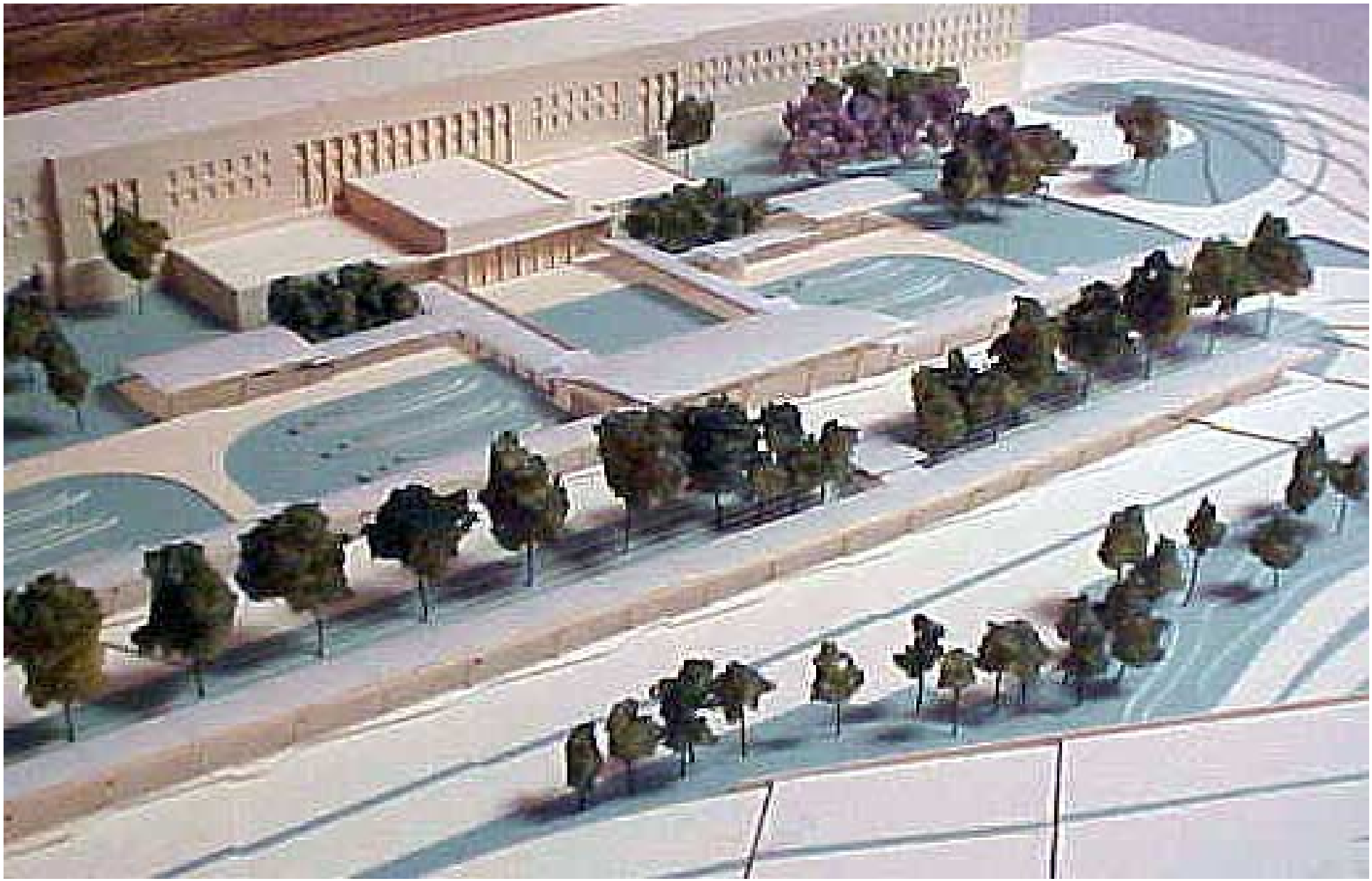
The Problem: Physical connection between Metro and the Pentagon

The Solution:

- Relocate Metro Bus Facility farther from Pentagon façade
- Eliminate physical connections between Metro Station and Pentagon

Pentagon Metro Entrance Facility -
Bus loop traffic completely separated from South Parking

Pentagon Metro Entrance Facility - November 2002 - Cover over all major paths



Pentagon Metro Entrance Facility

Coordination with customers and stakeholders key to design approval

Pentagon Metro Entrance Facility
- Coordination with persons with disabilities

Pentagon Metro Entrance Facility

- Construction began April 2001 on new bus facility

Pentagon Metro Entrance Facility - Construction on Schedule

Pentagon Renovation

On Cost, On Schedule, Built for the Next 50 Years

Accessibility Issues

Pentagon Metro Entrance Facility Project
Accessibility Issue: Access during construction transitions

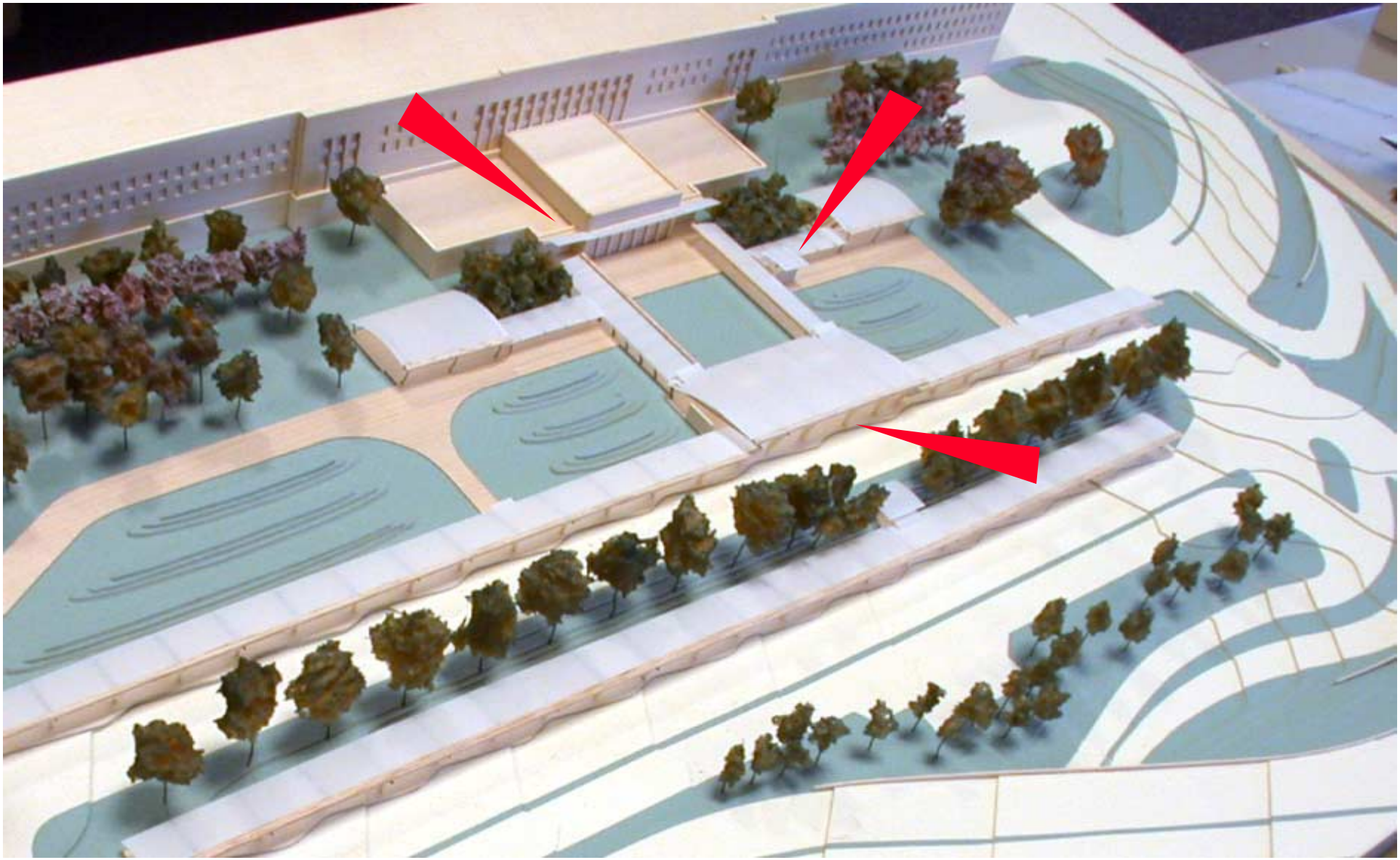
- Temporary paths to existing escalators will be fully covered.
- Renovation personnel, signage will assist commuters during transitions.
- Redundant vertical transportation will be in place before old elevators are removed

Accessibility Issue: Reliability, accessibility of existing elevators

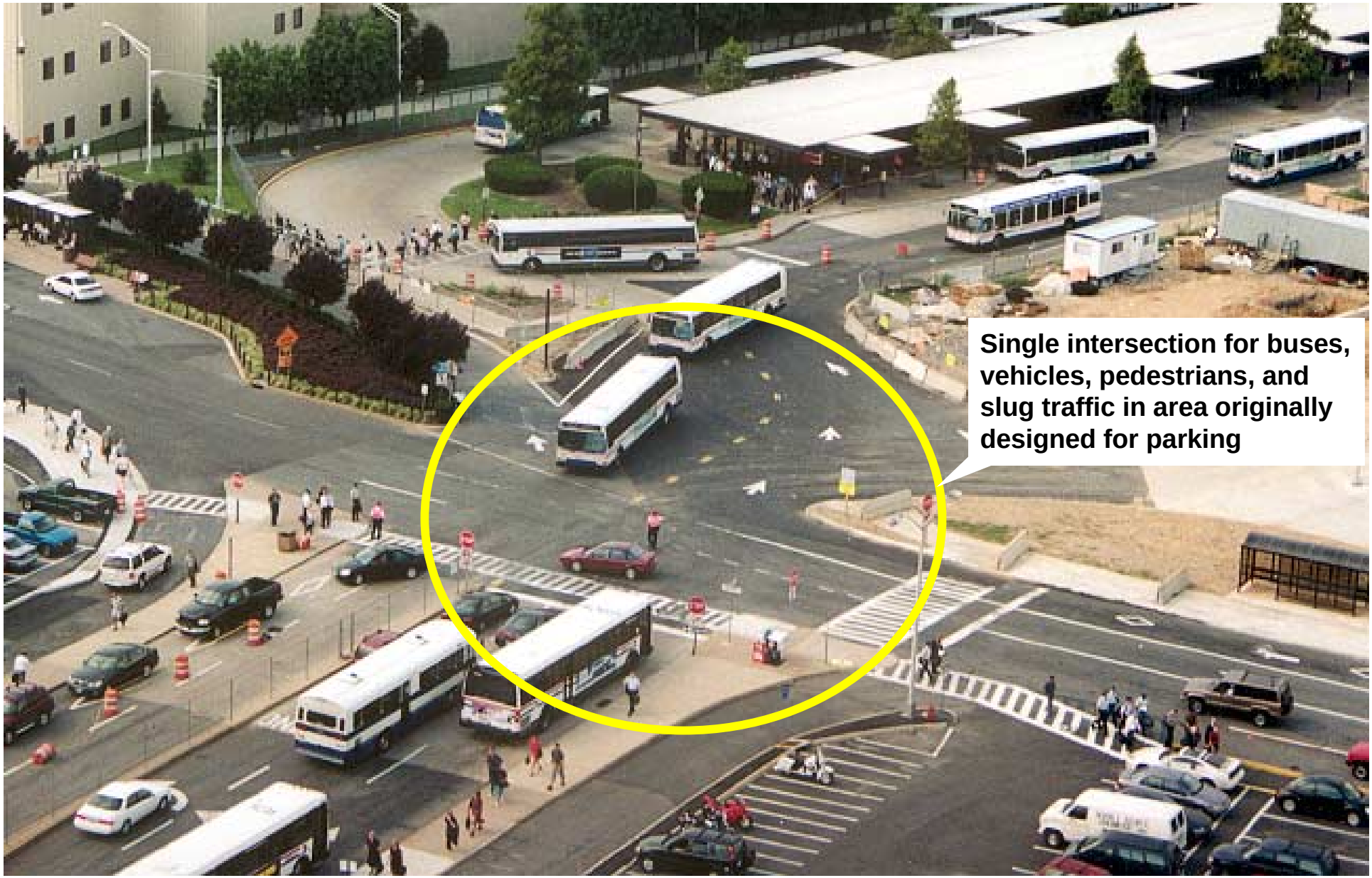
Issue: Elevators remotely located, poorly secured areas

Solution: Pentagon Metro Entrance Facility

- Two elevators, two escalators, and stairs at all vertical transition points
- New elevators will be operational before existing elevators are removed



Pentagon Metro Entrance Facility
Issue: Increase in traffic congestion during construction



Solution: More police officers present to direct traffic flow

Solution: - New “slug” line turn lane
- Additional studies to determine traffic flow alternatives

Issue: Seating Accessibility in cafeterias - immobile chairs

Solution: - Provide room for free-standing chairs

Accessibility Issue:
Ramp from Corridor 6 not ADA compliant

Ramp is temporary. New ramp from connector tunnel will be completed during Wedge 2 construction

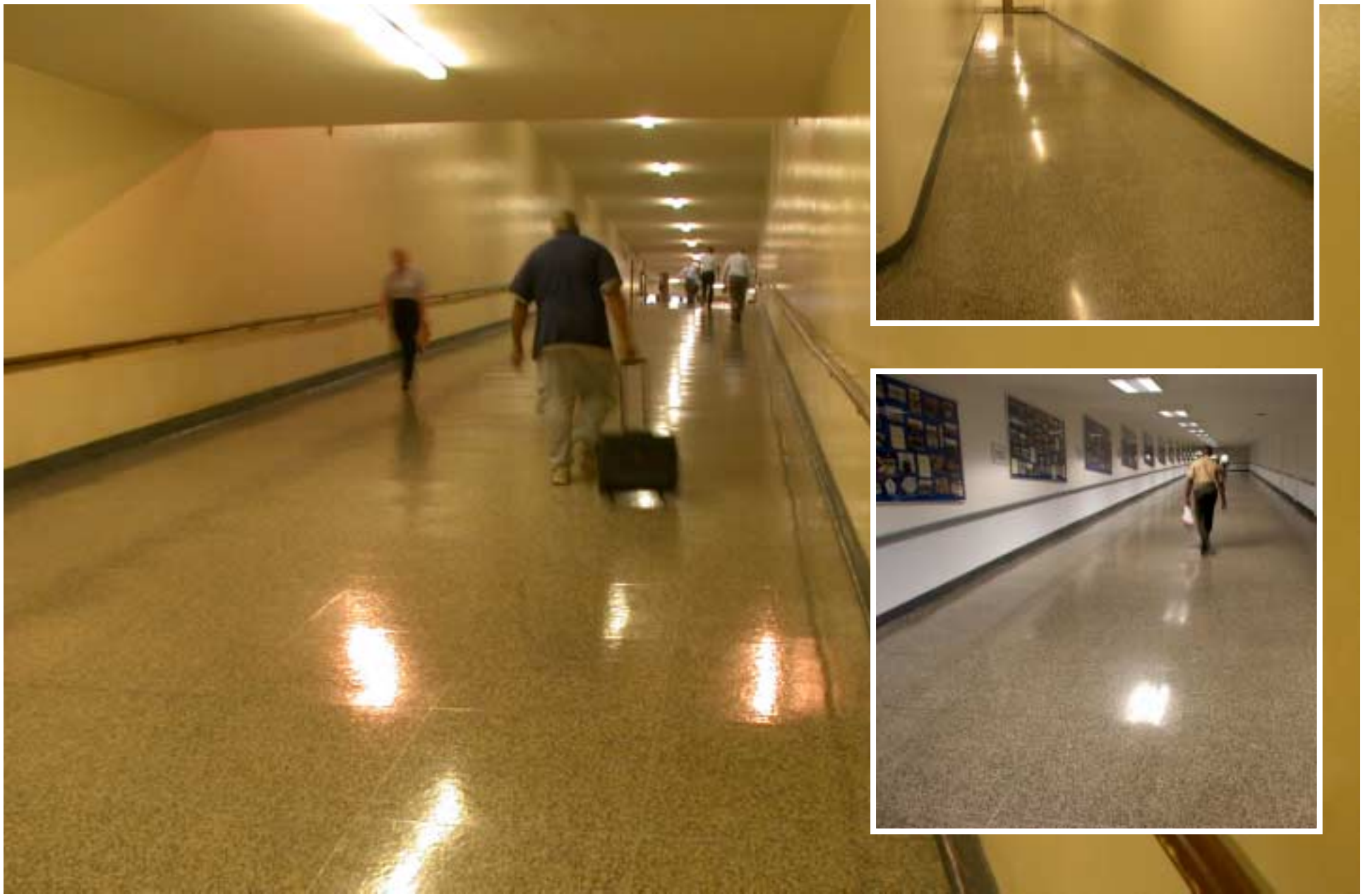
Accessibility Issue: Basement restroom accessible stalls need larger turn radius

Accessibility Issue: Wedge 1/Basement - Water fountain operation

Solution: Possible retro-fit with push-bar units; include in “lessons learned” for Wedges 2-5 contract

Issue: Wedge 1 - sink accessibility
Solution: Possible Removal, redesign of pipe cover panel

Issue: Wedges 2-5 - Ramp removal



Issue: South Terrace Pedestrian Bridge elevator reliability

- Elevator reliability has increased steadily. Two elevators provide redundancy.
- No instances of both elevators being down at same time in last year.
- Opening of Corridor 3 Bridge will eliminate congestion.
- No instance of both elevators out of service in past year

Issue: South Terrace Entrance at Corridor 2

- Crowed conditions in vestibule area between doors
- Reliability of automatic doors

Solution: Opening of Corridor 3 Bridge will cut pedestrian flow in half and relieve congestion in vestibule area

- Improvements to automatic doors being considered
- Heavy weight is principle cause of failure to operating mechanism.
- Usage will decrease with opening of Corridor 3 Bridge.

Issue: Existing freight elevators present hazards

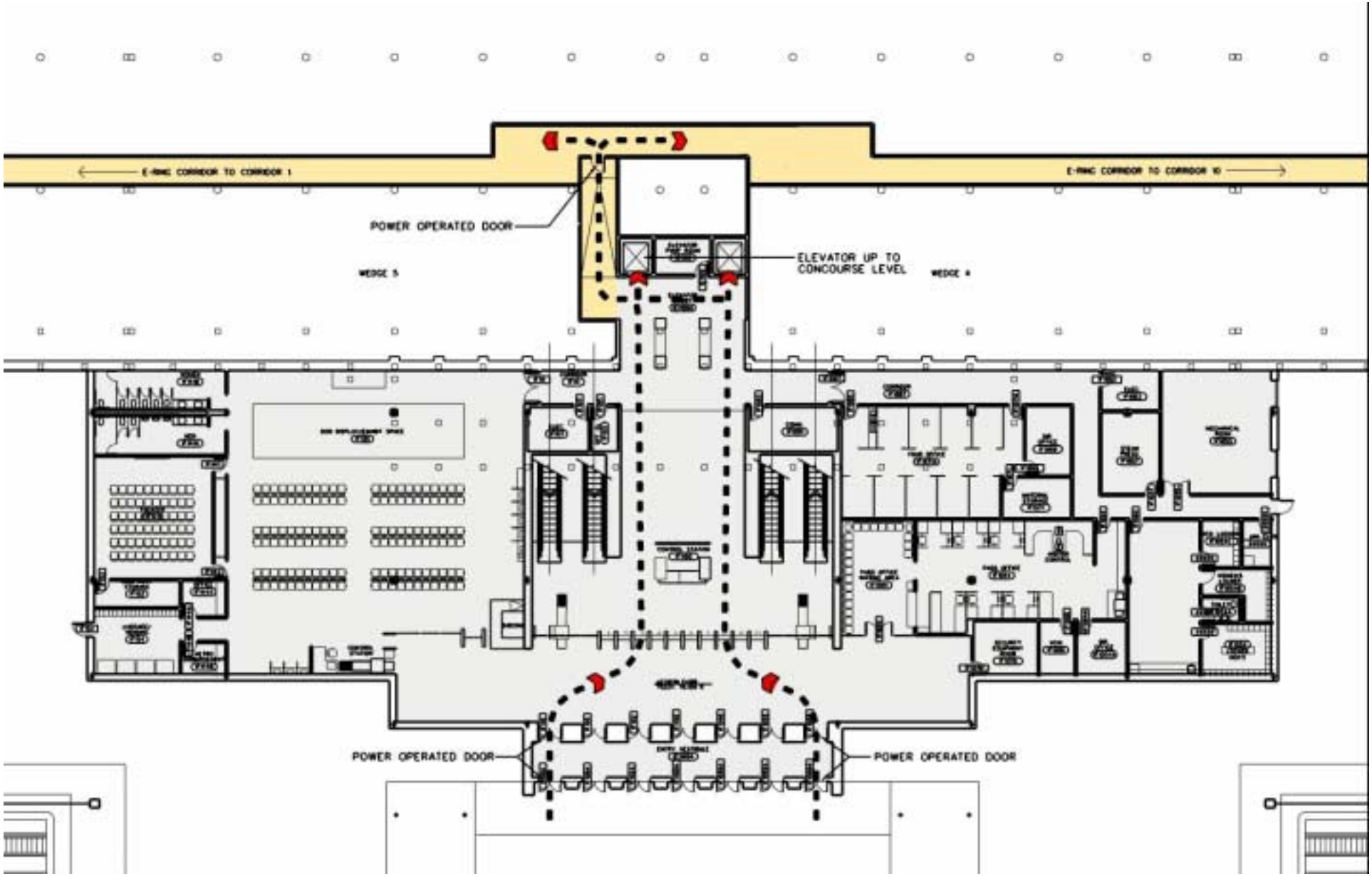
Solution: 8 passenger-only elevators in each wedge, 40 total

Solution: New apex escalators

Issue: BMDO Swing Space location presents accessibility obstacles

Solution: Coordination with DoD Disability Manager to determine best possible route and identify obstacles

Solution: Evaluate design options for access to BMDO via new Metro Entrance Facility

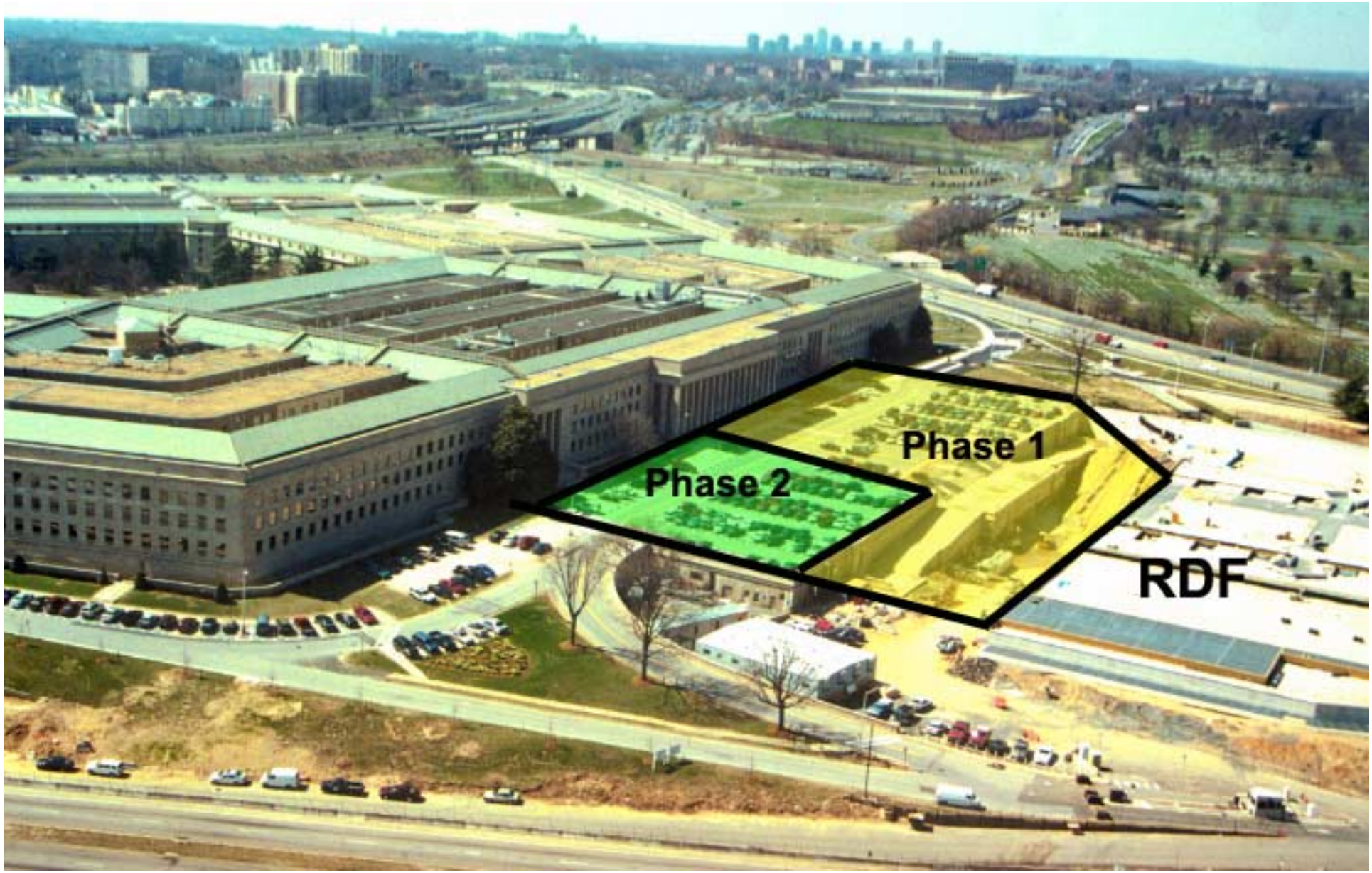


Issue: Corridor 8 Entrance Ramp slope not ADA compliant

Existing conditions prevent lowering bridge

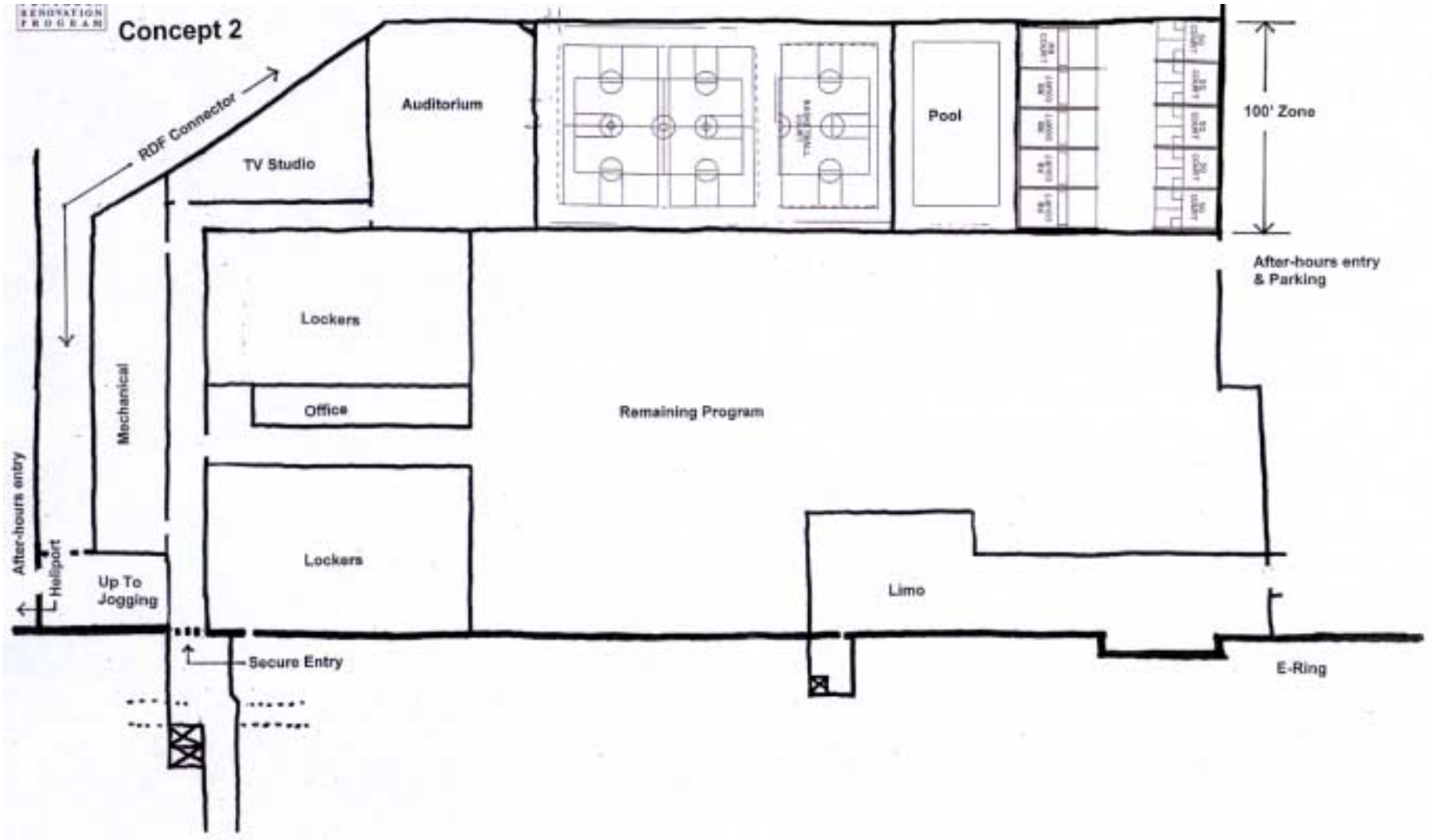
Pentagon Physical Fitness and Readiness Facility

Issue: Accessibility within new facility



Pentagon Physical Fitness and Readiness Facility

- Designed as one-story facility to eliminate vertical transition obstacles.
- Will be fully compliant with ADA.



Issue: Emergency Evacuation Procedures Need Refinement

Recommendations by the DoD Disability Manager, Pentagon:

- **Shelters should be constructed outside building and transport available to reach them**
- **Emergency personnel need to be aware of and recommend accessible alternatives, e.g., Pentagon City.**
- **Use SPVs to help people who don't walk well exit the building.**
- **Emergency personnel need to know wheelchair routes out of building (no stairs)**
- **Personnel throughout the building should be notified when a partial evacuation occurs**

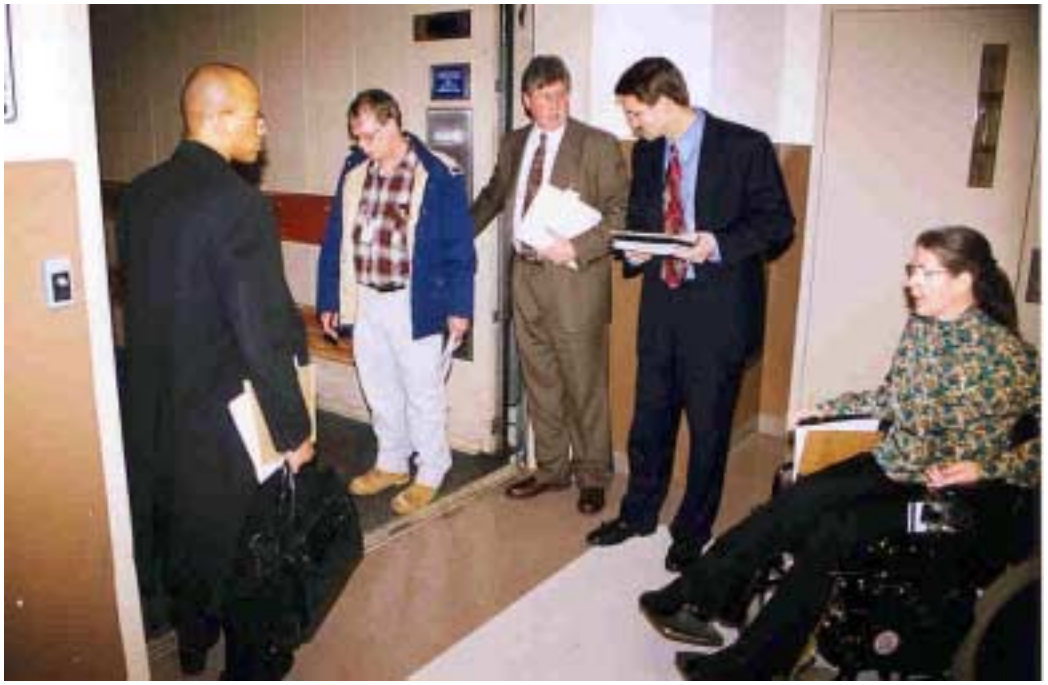
Issue: Emergency Evacuation Procedures Need Refinement

Recommendations by the DoD Disability Manager, Pentagon (cont'd):

- Alternate route need to be determined if ramps are removed and elevators shut down
- Persons with disabilities must be given priority use of elevators
- Persons with disabilities must review exit routes periodically in light of potential renovation impacts to corridors and exits
- Supervisors must be aware of employees that may have difficulty exiting building and take appropriate actions.
- Policy related to operation of "smoke doors"

Open Discussion

Renovation Tours for Persons with Disabilities



Wednesday, August 22, 2001, 1:00 PM
Wednesday, August 29, 2001, 1:00 PM

POC: Tom Fontana, (703) 693-8935